

FOOD FOR THE SKIN

— An Absorbing Report —

To maintain or repair our skin we need to feed it externally as well as internally, according to this pharmacist.

**by Maurice J. Czarniak
BSc, BPharm, FPS © 1999**

Czarniak Pharmaceuticals Pty Ltd
8/71 Manning Road
Manning, WA 6152, Australia
Telephone: +61 (0)8 9450 4180
Fax: +61 (0)8 9349 0596
E-mail: info@czarniak.com

What you are about to read, you will either accept, scoff at or dismiss as sheer lunacy. This is quite acceptable, as it is the way of humankind. I was once like that until I realised that everything, and everybody, is but an expression of infinity, and therefore needs to be respected and understood.

My adventure in life began in the kitchen. I was fascinated with food at an early age, but did not realise how it would ultimately affect my life until I finished my pharmacy degree. At my mother's insistence, I set out to develop a skin cream that would treat her dishpan-ravaged hands. Being the smart, fresh graduate, I simply put together different products to provide her with a poly-approach preparation, but this attempt was met with scorn and abuse. She was quite frankly not interested; she wanted a fresh approach, one that would ensure the natural regeneration of the skin to its normal, healthy state.

The challenge was to create a topical preparation, preferably a cream, incorporating fresh eggs. It seemed that my grandmother, an experienced hairdresser, had developed such a formula that not only regenerated skin but hair as well. Unfortunately my grandmother was deceased and her formula went with her. I could only rely upon my intuition, powers of observation and universal intervention to create this extraordinary product.

After two years of experimentation, the Healfas NMF product was born. Simply put, it was a combination of fresh eggs, nut oils, sugars and fats in a specially designed base that allowed complete expression of all of its ingredients, especially the foods. These were the active ingredients; they breathed life into an otherwise *dead* formula.

The final product was in essence a food, and with all of its qualities. The name "Healfas" was derived by combining the English word "heal" with the Latin word *fas*, meaning "divine law" or "natural law"—pertaining to healing in this case; not forced or influenced healing, but natural healing. The letters "NMF" were added, these standing for "natural, mending factors". Healfas NMF is a natural source of regeneration.

At last my mother was happy, but I did not realise how happy I had made her. Being a very curious woman, she experimented with the product on all sorts of 'accidents', cuts, abrasions, burns and infections as well as on wrinkles, fingernails and for hair conditioning, and she found it to be absolutely brilliant. I dismissed all of these claims because I considered them nothing more than the ramblings of a very proud and supportive mother.

Some years later I found myself in business in Yanchep, a coastal town some 60 minutes' drive north of Perth, which is famous for its crayfish and fishing industry and its Atlantis Marine Park. Once again at the insistence of my mother, I designed a simple label for the product and started to sell it from my pharmacy. The locals embraced the product warmly, and the glowing testimonials started to flow.

Stories of the resolution of dermatitis, eczema, psoriasis, nappy rash, shingles, cold sores, diabetic ulcers, burns (to about partial second-degree) and sunburn, plus accelerated fingernail and hair growth in women and animals (dogs, horses, cats) and even control of certain skin cancers, were delivered on a weekly if not daily basis. The Sunday newspaper ran a small article on the discovery and the local TV station repeated it.

I could no longer act as the bumbling, absent-minded professor. Now I had to understand what I had discovered. I knew that:

1. The product worked topically by supplying complete nutrition.
2. The product worked beyond topical layers to deeper tissues, this being deduced by its ability to stimulate hair and nail growth and also reverse rheumatoid arthritis in the hands of one elderly male.
3. The product either influenced skin physiology, did not influence skin physiology or possessed a unique carrier mechanism.

All of the above were supported by anecdotal evidence. It was my task to come up with the correct explanations, especially in light of evidence that the formulation accelerated regeneration and prevented scar tissue formation.

NUTRITION AND WOUND HEALING

The influence that nutrition has on wound healing was brilliantly dealt with in articles written by Bruno (1979) and Schuman (1979) and presented during a symposium on wound healing.

They both shared findings that malnourished patients and their bodily tissues were neither immuno-competent nor hormonal competent. Wound healing progressed very slowly, incompletely, and resulted in abnormal regeneration with greater-than-normal scar tissue formation. The approach that they took to remedy this situation was via the systemic route of delivering all essential nutrients. The contribution of each of these is shown in Table 1. The topical application of nutrients to dermal injuries was never considered.

Idson (1978) found that it was possible to achieve higher local concentrations of vitamins in the skin by topical application than by oral dosage. These vitamins included A, D2, E and panthenol.

As a consequence, skin conditions such as keratosis, ichthyosis, wrinkles, connective tissue loss and stretch marks would benefit from application of these vitamins.

It was further found that essential fatty acids and protein hydrolysates also had a beneficial influence on skin physiology and traumatised states such as eczema, psoriasis and dermatitis. However, penetration of the skin was limited by molecular size and other physio-chemical properties (Johnsen & Chiostrì, 1978; Johnsen, 1984; Prottey, 1977; Takehara, 1983).

The problem with all of these approaches was that people were dealing with chemically altered states rather than with natural, unaltered states, and that, in the majority, the research was performed by companies seeking profits rather than honest, long-lasting benefits for consumers.

Before Healfas NMF, there were no commercially available products that considered satisfying the complete nutritional requirements of the skin—and there have been none since. Centuries ago, European peasants used certain food combinations for topical use, but these had a very short shelf-life due to lack of preservatives.

The Healfas formula supplies everything and more that the skin requires to remain healthy and capable of quick regeneration, with almost no lag time in commencing regeneration and healing time reduced by as much as 50 per cent. The first sign that regeneration is occurring is how quickly the inflammatory phase subsides after application of the product. This is important, for inflammation is the first step in the healing process and usually lasts three to four days (Bruno, 1979). Its purpose is to elicit cellular migration, blood flow and nutrition to the area. The rapid reduction in inflammation is via a biofeedback mechanism which signals all the necessary building blocks present to cease supply.

The healing process is classified into three phases: defensive, reconstructive and regenerative. The last phase may take up to two years after the trauma has occurred.

Because the Healfas product is made from fresh eggs and nut oils, it not only contains the entire spectrum of nutrients necessary

for new life, but also contains genetic material—RNA and DNA—plus various hormones, enzymes, growth factors and cholesterol. Each of these contributes in a beneficial way to the healing process. However, cholesterol deserves more mention, as do sulphur-containing amino acids.

CHOLESTEROL: A BENEFICIAL SUBSTANCE

Cholesterol, although much maligned for its 'dirty role' in 'causing' cardiovascular disease, is actually a very beneficial natural substance. It is only man's sceptical and destructive attitudes that prevent a proper understanding of its importance.

Cholesterol was first discovered in gallstones by Poulletier de La Salle in 1770. Since then it has been identified in practically all living organisms—animal and vegetable and microscopic. It is present in bacteria, blue green algae and fungi. It has been found in waters of the Gulf of Mexico and it is hypothesised that various compounds found in crude petroleum are formed from cholesterol. Commercial sources of cholesterol include lanolin alcohols (wool workers have beautiful skin on their hands and forearms through contact with it), animal fats, fish oils and spinal cords.

Human skin and sebum are rich in cholesterol. And because

nervous tissue is high in cholesterol content, expectant woman should not reduce their cholesterol intake during pregnancy, as this may lead to imperfect nerve formation and dysfunction in the developing foetus.

In a human weighing 65 kilograms there is approximately 210 grams of cholesterol, the largest single amount being in the skin. Cholesterol is an important physiological component of cells. It is bound to the proteins of the external membranes, it is a necessary growth factor in cells, and it is a precursor to steroid hormones in the adrenals,

ovaries and testes. It is present in fingernails and in the enamel of teeth, and it increases the vitamin D3 content of the skin.

As an ingredient in topical products for certain skin disorders, cholesterol serves as a skin protectant and treatment by simply replenishing itself. Incorporation of one per cent of cholesterol to olive oil increases the absorption of olive oil by the skin. Cholesterol is also used in hair tonics to stimulate hair growth, as is white, soft paraffin which normally sits on the skin surface; but when cholesterol is added to the paraffin, the penetration is increased by 33 per cent, which overcomes problems such as interference with surface cooling and inhibition of perspiration.

Cholesterol is an especially active compound that can eliminate polymerisation of light; thus it possesses sun-filtering qualities. It also prevents induced erythema of the skin.

Cholesterol is found *in situ* in the skin, and oily skin contains high concentrations of it. Exposure to the sun slows its formation, and interference with its synthesis produces dryness and chapping of the skin.

The lipid film of normal skin dermis is derived from the epidermis and sebaceous glands. The "barrier" within the hairy layer of the skin is said to be responsible for inhibiting diffusion of water. The power of this barrier to retain water is primarily due to lipids that contain up to 90 per cent cholesterol.

The composition of human skin lipids changes from birth to puberty. Cholesterol concentration is low at five days of age, and increases to a maximum level between four to eight years of age (one could argue that at this time the skin is at its most beautiful);

Cholesterol, although much maligned for its 'dirty role' in 'causing' cardiovascular disease, is actually a very beneficial natural substance.

then, between 10 to 15 years, it decreases to adult levels. In aged skin there is a dramatic drop in skin cholesterol content. Cholesterol levels are very low in balding men and women and in people with psoriasis, and very low levels are thought to be associated with skin cancer formation.

It has been claimed that cholesterol, in combination with lecithin, linoleic acid and alcohol, promotes the healing of burns, stimulates hair growth and inhibits the growth of the herpes virus.

ESSENTIAL AMINO ACIDS

The dermal barrier also contains amino acids, but most of these are essential; that is, they must be obtained from dietary sources as the body does not synthesise them. They include phenylalanine, valine, threonine, tryptophan, isoleucine, methionine, lysine and leucine. In addition, histidine and arginine are required by children.

Arginine is required for proper repair in the physically traumatised adult. It is a hot item in the food supplement marketplace, for its appeal has been fuelled by its ability to burn fat while building muscle. By virtue of its unique stimulating effect upon growth hormone, which in turn influences the synthesis of proteins, arginine has been found to stimulate the immune system and produce highly activated white cells. It has also demonstrated a significant anti-tumour effect in laboratory animals.

Cysteine, methionine and taurine, all sulphur-containing amino acids, inactivate free radicals, thus protecting and preserving cells. In diets supplemented with these amino acids, the life span of the animal is increased by the above mechanism via a participation in DNA repair and by their anticarcinogenic effect.

Cysteine, in combination with pantothenic acid, has produced very positive effects for patients suffering osteo-arthritis and rheumatoid arthritis.

Applied topically, cysteine has been seen to increase the rate of quality healing by up to 50 per cent in conditions such as grazes, varicose ulcers, diabetic ulcers, burns, psoriasis, lichen simplex, and to increase the formation and maturation of collagen. Similar results have also been noted from other sulphur-containing amino acids.

Methionine and taurine are important regulators in nervous and muscle systems, in terms of growth and maintenance.

SKIN ABSORPTION

Simple occlusion of the skin (this is putting some sort of impervious covering over it) not only raises the water content of the stratum corneum but also the rate of penetration of lypophitic (fat-loving, water-hating) drugs. No reasonable explanation has been offered for this phenomenon.

Soaps, detergents and surfactants (shampoos) influence transdermal substance penetration by acting on the barrier found within the stratum corneum, making it permeable to water and water solutes including themselves. Hence, when one looks at complex shampoo formulas, not only are consumers cleaning their hair and scalp but they're allowing the penetration of the constituents, which may prove harmful to some people. However, it appears that a limitation may be the molecular weight of the substance. Molecular weights of about 500 seem to be the upper limit.

A second explanation for the contribution of surfactants to penetration is provided by Rieger et al. (1988). They suggest that the

Table 1: Nutrients Affecting Wound Healing

Nutrient	Specific Component	Contribution to Wound Healing
Proteins	Amino acids	<ul style="list-style-type: none"> • Needed for neovascularisation, lymphocyte formation, fibroblast proliferation, collagen synthesis and wound remodelling. • Required for certain cell-mediated responses, including phagocytosis and intracellular killing of bacteria.
	Albumin	<ul style="list-style-type: none"> • Prevents wound oedema, secondary to low serum oncotic pressure.
Carbohydrates	Glucose	<ul style="list-style-type: none"> • Needed for energy requirement of leukocytes and fibroblasts to function in inhibiting activities of wound infection.
Fats	Unsaturated fatty acids a. Linoleic b. Linolenic c. Arachidonic	<ul style="list-style-type: none"> • Serve as building blocks for prostaglandins that regulate cellular metabolism, inflammation and circulation. • Are constituents of triglycerides and fatty acids contained in cellular and subcellular membranes.
	Ascorbic acid	<ul style="list-style-type: none"> • Hydroxylates proline and lysine in collagen synthesis. Enhances capillary formation and decreases capillary fragility. • Is a necessary component of complement that functions in immune reactions and increases defences to infection.
	B complex	<ul style="list-style-type: none"> • Serves as a co-factor of enzyme systems.
Vitamins	Pyridoxine, pantothenic and folic acids	<ul style="list-style-type: none"> • Required for antibody formation and white blood cell function.
	A	<ul style="list-style-type: none"> • Enhances epithelialisation of cell membranes. • Enhances rate of collagen synthesis and cross-linking of newly formed collagen. • Antagonises the inhibitory effects of glucocorticoids on cell membranes.
	D	<ul style="list-style-type: none"> • Necessary for absorption, transport and metabolism of calcium. • Indirectly affects phosphorus metabolism.
	E	<ul style="list-style-type: none"> • No special role known. May be important if there is a fatty acid deficiency.
	K	<ul style="list-style-type: none"> • Needed for synthesis of prothrombin and clotting factors VII, IX and X. • Required for synthesis of calcium-binding protein.
Minerals	Zinc	<ul style="list-style-type: none"> • Stabilises cell membranes. • Needed for cell mitosis and cell proliferation in wound repair.
	Iron	<ul style="list-style-type: none"> • Needed for hydroxylation of proline and lysine in collagen synthesis. • Enhances bactericidal activity of leukocytes. • Secondarily, deficiency may cause decrease in oxygen transport to wound.
	Copper	<ul style="list-style-type: none"> • Is an integral part of the enzyme, lysyloxidase, that catalyses formation of stable collagen cross-links.

adjuvant surfactant molecule modifies junctions between cells. By interacting with the junction's protein surface, it becomes less hydrophilic and the gaps enlarge, with an associated increase in hydrophilic channels, allowing large molecular weight molecules to proceed through.

The penetration enhancers, such as propylene glycol, glycerine, dimethyl sulphoxide and ethanol (alcohol), also modify the nature of the stratum corneum membrane, even to a permanent extent.

Other biological factors that influence substance penetration and absorption, besides skin hydration, include disease states (both dermal and systemic), cutaneous blood flow, skin biochemistry and cutaneous biotransformations.

By now, the picture of how important food is to us is slowly developing, but the magic of it can only be obtained by marrying the correct foods together for the very best results. This is precisely what happened with my experimentation. But what also happened was that my conscious awareness of the relationship between food and humans was raised beyond that of simply placing food down our gullets, because 'in the gullet' is not 'in the body' and the human skin is not as impervious as I had thought.

Part of the body's 'inside' is really 'outside', i.e., the alimentary canal which leads from mouth to anus (Dixon, 1986). The function of this long tube, with its various specialised regions, is to digest incoming food. Digestion is the process of breaking down food into simpler substances that can be assimilated as sources of energy and building materials for the body's maintenance and growth.

But what if the food is already broken down? And what if it is applied on the outside, i.e., topically? What can we expect to see?

In the case of Healfas NMF, as all of the anecdotal evidence suggests, we can expect the complete care of the body's largest organ, namely the skin and all its appendages, i.e., hair, nails and associated glands, whether intact or damaged. Why? Because in the process of preparing

the product from fresh produce, the mechanical process of incorporating fresh eggs with the other ingredients ruptures the membranes surrounding the yolk, leading to activation of enzymes and breakdown of large molecules into smaller constituents which are readily assimilated.

But can we expect a deeper effect? The answer, again, is 'yes', but it is very complex and may not be limited to that contained in the literature on cholesterol and its influence on skin penetration of various substances.

Because Healfas encouraged fingernail and hair growth, it would be correct to assume that it was doing this at the deep, germinal layers of the skin. Also, because it had such a profound effect on rheumatoid arthritis—to the point where the gentleman concerned, Mr Marshall, could do away with his medication and play the piano again—it hinted that it possessed extraordinary qualities.

Besides the influence of complete nutrition and the presence of cholesterol, other answers lay in both the yolk and white of the egg. Both were used in leather manufacture to facilitate the penetration of lipids into animal hides. It was not only the lipids of the yolk that achieved this, but proteins in the white as well.

The action of the product was not limited to supplying nutrition because of its effect on deeper tissues, so I decided to investigate the transdermal carrier mechanism and see what it would

transport. Over a short period of time I conducted experiments on myself and willing family members, using certain drugs such as insulin and anti-hypertensives added to the Healfas NMF formulation. When both of these products were applied topically, each in their own separate application, the anti-hypertensive combination caused a lowering in blood pressure and the insulin combination dramatically lowered the blood sugar levels.

M. Rieger, J. Riviere and J. Faucher have published a number of papers on skin penetration and the various factors that influence it. Penetration may proceed transcellularly, i.e., through cells; intercellularly, i.e., paracellularly or between cells; or through so-called shunts, i.e., holes in the membrane, such as sweat ducts and hairs.

Hydration of the skin plays a major role in the rate of penetration. Penetration of substances is somehow related to the ethanol/water distribution co-efficient and to their ability to 'escape' from the vehicle into and ultimately through the stratum corneum membrane (the outer membrane of the skin). This type of passive diffusion is also dependent on the molecular weight or shape as well as the polarity of the penetrant.

There exists a series of mysterious substances—emulsifiers, solubilisers and penetration enhancers—that materially increase transmembrane diffusion. These include dimethyl sulphoxide (DMSO), ethylene diamine, propylene glycol and glycerine.

People with dermatologic disorders—such as eczema, which results in thicker skin—have decreased absorption in their skin. In contrast, absorption is increased through skin affected by psoriasis or ichthyosis. In diabetes conditions, the structure of the epidermal basement membrane is altered so that diffusion out of cutaneous capillaries is enhanced, which alters the absorption of compounds.

Removal of the stratum corneum using techniques such as peeling agents, abrasion or blistering, results in

enhanced compound penetration with a return to normal flux when the stratum corneum is regenerated.

The blood flowing through the skin is dependent upon ambient temperature. When this exceeds body temperature, cutaneous blood flow increases and, with it, substance penetration. A three-fold increase in methylsalicylate absorption was seen in humans exposed to high temperatures or who underwent strenuous exercise. Increased blood flow was certainly a major factor, but increased skin hydration or sweating also contributed, as previously mentioned.

Once a substance has penetrated into the skin, it may enter the circulation unaltered or be metabolised due to epidermal biotransformation. (Both phase I and II metabolic pathways have been identified.) The outcome depends upon the nature of the substance, and the inherent activity of epidermal enzymes and their anatomical location within the epidermis.

All the research on skin penetration primarily looks at the effect of synthetic chemicals. Apart from my own work, I have not been able to find any work that's been done on skin penetration and food, though this is only true in the scientific sense and not in the cultural or anecdotal sense.

However, more information is now coming to light with respect to the topical application of fresh foods for the treatment of certain dermal conditions and for beauty purposes. In books such as

... more information is now coming to light with respect to the topical application of fresh foods for the treatment of certain dermal conditions and for beauty purposes.

Heinemann's Encyclopedia of Fruits and Vegetables, you will read about applying cabbage leaves for the relief of arthritic pain and banana skins for the removal of plantar warts, the use of honey in burns, ulcers and gout, and grated potatoes in the treatment of inflammation, to mention a few applications.

NEW FORMULATIONS

Needless to say, I have continued to research Healfas NMF with a view to understanding it more. Certainly, whatever is added to it is magnified in its effect. This is both good and bad. Substances that are irritants must be reduced in concentration; whereas those that are not, achieve even greater results.

This has led to a careful consideration of the preservative system. Healfas NMF does not contain any sensitising preservative, for experience has shown that it may produce allergic reactions. The formulation uses only the gentlest preservative available.

Furthermore, incorporation of other foods has led to a magnification of specific applications. For example, in the quest to find the ultimate beauty products, I have incorporated fresh fruits such as strawberries, peaches, avocados and cucumbers, additives such as chocolate, various essential oils as well as culinary spices.

The formulation incorporating strawberries and fresh dairy cream has demonstrated a remarkably accelerated ability to resolve burns in one quarter of the normal time. This is in keeping with the ancient cultural use of applying mashed strawberries to burns of varying severity.

The use of chocolate in association with dairy cream produced a formulation that has reduced the severity of superficial capillaries, improved appearance of wrinkles by 50 per cent but, most importantly, resolved skin cancers because of the high levels of essential fatty acids found in chocolate.

Finally, the incorporation of culinary spices and essential oils has produced perhaps the world's first anti-cellulite solution.

Is there a down side to the raised awareness that the skin is

more absorptive than previously thought? From the application of food, the answer is 'no', except for people who unfortunately are allergic to certain foods. The vast majority benefit to varying extents depending upon their health and nutritional status.

What about synthetic substances? In this case, the answer would have to be 'yes'. As previously described, the very act of washing and beautifying our bodies, using soaps, detergents and various beauty products, causes a change in the absorption by the skin so that it is manipulated; and, with that, irritant or toxic substances are absorbed to a greater extent so that disease states of a local or systemic nature may occur. The first to be seen is that of increased irritation leading to the precipitation of more serious conditions such as eczema, dermatitis and/or psoriasis.

I made the statement that even beauty products can cause problems. This is because the constitutional makeup of creams and lotions contains a surfactant/detergent system that influences the absorbability of the skin.

In 1990, it was reported that the major prestigious cosmetic companies had to withdraw many of their cream and lotion products because they contained a substance, urocanic acid, included to improve the smoothness of the skin but which ended up promoting the formation of cancers.

The cosmetic companies are constantly on the hunt for ingredients that give them the edge over others. In the process, though, the final product

becomes questionable in its ability to do anything for the skin and, more importantly, becomes questionable in its safety.

The US Food and Drug Administration (FDA) is constantly monitoring ingredients for safety. However, without doubt, synthetic products will *never* approach the safety or effectiveness of the natural product.

My journey into this sphere of learning has inspired me to prepare the best natural products for the benefit of the health and beauty of the body's largest organ, namely, the skin.

Has there been a price? There certainly has, paralleling that of a biblical story; but then, that is another tale to tell.

... the very act of washing and beautifying our bodies, using soaps, detergents and various beauty products, causes a change in the absorption by the skin ...

Bibliography

- Bruno, P., "The Nature of Wound Healing: Implications for Nursing Practice", *Nursing Clinics of North America*, vol. 14, no. 4, December 1979, pp. 667-681
- Burley, R. W., and D. V. Vadehra, *The Avian Egg: Chemistry and Biology*, Wiley & Sons, New York, 1984, pp. 351-395
- Dixon, B. (Ed.), *Health and the Human Body*, Perseus Press, Sydney, 1986, pp. 113-132
- Faucher, J. A., "Sorptions of Organic Compounds by Human Skin", *Cosmetics and Toiletries*, vol. 92, April 1977, pp. 61-2
- Idson, B., "Vitamins in Emolliency and Moisturizing Preparations", *Cosmetics and Toiletries*, vol. 93, March 1978, pp. 77-79
- Johnsen, V. L. and R. F. Chiostrì, "Protein Hydrolysates as Moisturizers", *Cosmetics and Toiletries*, vol. 93, March 1978, pp. 83-84
- Johnsen, V. L., "Protein Chemistry as

- Related to Cosmetics Toiletries" (Revised), *Cosmetics and Toiletries*, vol. 99, December 1984, pp. 83-84
- MacLatchy, J., "Cancer Scare Lifts Lid on Makeup", *Sunday Times*, 23 December 1990, p. 24
- Prottey, C., "Essential Fatty Acids and the Skin", *Cosmetics and Toiletries*, vol. 92, April 1977, pp. 59-62
- Rieger, M. et al., "Skin Penetration Revisited", *Cosmetics and Toiletries*, vol. 103, February 1988, pp. 69-76
- Riviere, J. E., "Biological Factors in Absorption and Permeation", *Cosmetics and Toiletries*, vol. 105, October 1990, pp. 85-93
- Schumann, D., "Preoperative Measures to Promote Wound Healing", *Nursing Clinics of North America*, vol. 14, no. 4, December 1979, pp. 683-699
- Takehara, M., "Recent Applications of Amino Acids for Cosmetics: Interactions

and Synergistic Effects of Amino Acids", *Cosmetics and Toiletries*, vol. 98, July 1983, pp. 51-56

About the Author:

Maurice J. Czarniak, BSc, BPharm, FPS, is a pharmaceutical chemist based at Manning, north of Perth, Western Australia. Having studied medicine for three years, eventually he obtained his Bachelor of Science and Bachelor of Pharmacy degrees.

After graduation, he continued to research the science of food, its relationship to skin health and general well-being, and its ability to overcome disease. In addition to the Healfas NMF formula, he has produced and continues to research all-natural-ingredient treatments for baldness, cellulite, varicose veins and menopausal problems, as well as formulas for general beauty purposes.